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| <b>Module title</b>   |                          | <b>Abbreviation</b>  |
| Theory of Complexity  |                          | 10-I-KT-102-m01  |
| <b>Module coordinator</b>   |                          | <b>Module offered by</b>   |
| Dean of Studies Informatik (Computer Science)   |                          | Institute of Computer Science  |
| <b>ECTS</b>   | <b>Method of grading</b> | <b>Only after succ. compl. of module(s)</b>  |
| 5   | numerical grade          | --   |
| <b>Duration</b>   | <b>Module level</b>      | <b>Other prerequisites</b>   |
| 1 semester  | undergraduate            | Admission prerequisite to assessment: exercises (type and scope to be announced by the lecturer at the beginning of the course). |
| <b>Contents</b>   |                          |  |
| Complexity measurements and classes, general relationships between space and time classes, memory consumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation methods, P-NP problem, completeness problems, Turing reduction, interactive proof systems.  |                          |  |
| <b>Intended learning outcomes</b>   |                          |  |
| The students possess a fundamental and applicable knowledge in the areas of complexity measurements and classes, general relationships between space and time classes, memory consumption versus computation time, determinism versus indeterminism, hierarchical theorems, translation methods, P-NP problem, completeness problems, Turing reduction, interactive proof systems.  |                          |  |
| <b>Courses</b> (type, number of weekly contact hours, language – if other than German)  |                          |  |
| V + Ü (no information on SWS (weekly contact hours) and course language available)  |                          |  |
| <b>Method of assessment</b> (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)  |                          |  |
| written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes)<br>Language of assessment: German, English if agreed upon with the examiner  |                          |  |
| <b>Allocation of places</b>   |                          |  |
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| <b>Additional information</b>   |                          |  |
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| <b>Workload</b>   |                          |  |
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| <b>Teaching cycle</b>   |                          |  |
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| <b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)  |                          |  |
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| <b>Module appears in</b>  |                          |  |
| Bachelor' degree (1 major) Computer Science (2010)<br>Bachelor' degree (1 major) Mathematics (2012)<br>Bachelor' degree (1 major) Mathematics (2013)<br>Bachelor' degree (1 major) Computational Mathematics (2012)<br>Bachelor' degree (1 major) Computational Mathematics (2013)<br>Bachelor' degree (1 major) Aerospace Computer Science (2009)<br>Bachelor' degree (1 major) Aerospace Computer Science (2011)<br>Master's degree (1 major) Computer Science (2010)<br>Master's degree (1 major) Mathematics (2012) |                          |  |

Master's degree (1 major) Mathematics (2010)

Master's degree (1 major) Computational Mathematics (2012)

First state examination for the teaching degree Gymnasium Computer Science (2009)